

WHAT IS CLAIMED IS:

1. A method for recovery of a concentrated protein or biomolecule of interest from the interstitial fluid of a plant tissue comprising the steps of:
 - 5 (a) infiltrating a plant tissue with a buffer solution;
 - (b) subjecting the plant tissue and buffer solution to a substantially vacuum environment;
 - (c) removing the tissue from the buffer solution;
 - (d) centrifuging the tissue to remove interstitial fluid; and
 - 10 (e) concentrating the protein or biomolecule of interest from the interstitial fluid; wherein said plant tissue is in the quantity of kilograms.
2. The method of Claim 1, wherein said tissue is centrifuged in a basket centrifuge.
- 15 3. The method of Claim 1, wherein the protein or biomolecule is concentrated by means of ultra filtration.
4. The method of Claim 1, wherein the protein or biomolecule is concentrated by means of expanded bed chromatography.
- 20 5. The method according to Claim 1, wherein the plant tissue is selected from the group consisting of: leaves, stems, shoots, flowers, fruit and roots.
6. The method according to Claim 5, further comprising the step of dissecting the plant leaf substantially along the midrib before infiltrating the plant leaf with a buffer solution.
- 25 7. The method of Claim 1, wherein the buffer solution is selected from the group consisting of: Citrate, Phosphate and Tris.
8. The method of Claim 7, wherein the buffer solution contains detergents selected from the group consisting of sodium laurocholate, SDS, t-octylphenoxypolyethoxyethanol, fatty acid esters of polyoxyethylenesorbitan, phospholipids, bile salts, sodium deoxycholate and sodium
30 lauryl sulfate.

9. The method of Claim 7, wherein the buffer solution contains chelators selected from the group consisting of: EDTA, EGTA and citrate.
10. The method of Claim 7, wherein the buffer solution contains antioxidants selected from
5 the group consisting of: α -mercapto ethanol, ascorbate, sodium metabisulfate and dithiothreitol.
11. The method of Claim 5, wherein the plant leaf and buffer solution are subjected to a vacuum pressure of about 200 up to 760 mm Hg.
12. The method of Claim 11, wherein the vacuum pressure is about 400 up to 760 mm Hg.
13. The method of Claim 12, wherein the vacuum pressure is about 740 up to 760 mm Hg.
- 10 14. The method of Claim 13, wherein the vacuum pressure is about 760 mm Hg.
15. The method of Claim 1, wherein the centrifugation is conducted at a G-force range of 50-5,000 x G.
16. The method of Claim 15, wherein the centrifugation is conducted at a G-force range of
15 about 2,000 x G.
17. The method of Claim 1, wherein the protein of interest is produced in the plant by a recombinant plant viral vector.
- 20 18. The method of Claim 1, wherein the protein of interest is produced by a transgenic plant.
19. The method of Claim 1, wherein the protein of interest is produced naturally in the plant.
20. The method of Claim 1, further comprising the step of draining or blotting excess buffer
25 from the tissue before centrifuging.

21. The method of Claim 1, further comprising the step of transferring the tissue from the buffer solution to the centrifuge by means of a discontinuous batch process.

22. The method of Claim 1, further comprising the step of substantially purifying a protein
5 of interest from the tissue remaining after the interstitial fluid has been removed by centrifugation.

23. The method of Claim 1, wherein the protein is derived from cellular components selected from the group consisting of: the plasma transmembrane, peroxisomes, associated
10 membranes, other organelles, the nucleus, the Golgi apparatus, the cytosol, the rough and smooth endoplasmic reticulum, the mitochondria, the vacuole and the chloroplast.

24. The method of Claim 1, wherein the protein of interest is a ribosome inactivating
15 protein.

25. The method of Claim 1, wherein the protein of interest is a human lysosomal enzyme.

26. The method of Claim 1, wherein the protein of interest is an industrial enzyme.

20 27. The method of Claim 1, wherein the protein of interest is a cytokine.

28. The method of Claim 1, wherein the protein of interest is an antibody or antibody fragment.

25 29. The method of Claim 1, wherein the protein of interest is α -galactosidase or an isozyme of α -galactosidase.

30. The method of Claim 1, wherein the protein of interest is glucocerebrosidase or an isozyme of glucocerebrosidase.

30 31. The method of Claim 1, wherein the protein of interest also comprises a signaling peptide to direct the protein to a specific compartment within a cell.

32. The method of Claim 1, wherein more than one type of protein can be simultaneously purified.

33. The method according to Claim 1, wherein said infiltration is a continuous infiltration by
5 means of a cylindrical pressure vessel containing an internal auger with a rotary inlet and a rotary discharge valve.

34. A method according to Claim 2, wherein said basketcentrifuge is capable of being
accelerated to recover IF at about 2000-2500 x G and leaf material is discharged through a split
10 rotor design.